Midwest Technology Assistance Center
Groundwater Resource Assessment for Small Communities

# Groundwater Availability At Niantic, Illinois

(Macon County)

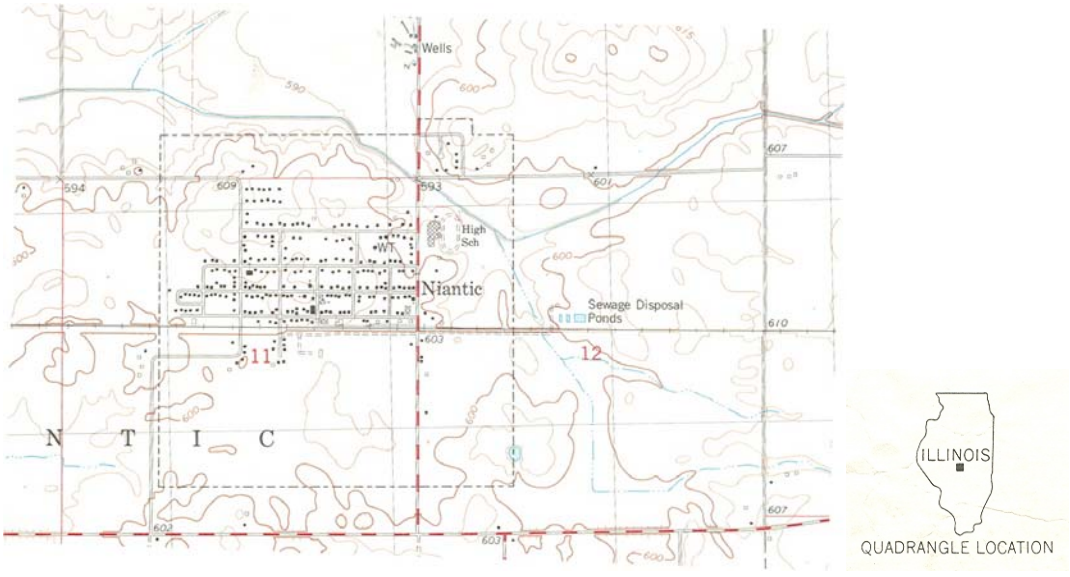
## Project Overview

This project is an outgrowth of the Public Service Program of the Center for Groundwater Science (CGS) at the Illinois State Water Survey. For over 50 years, the CGS has provided groundwater information to any requesting individual, commercial facility or public water facility. Groundwater resource assessments have been an integral part of this public service and have been undertaken for thousands of individuals and facilities throughout its history. Community groundwater supplies that have been identified as potentially "deficient" are the targets for this project. The criterion used for determining community deficiency were; 1) Water Supply and Demand (operating time), 2) Aquifer Limitation, 3) Well Specific Capacity, and 4) Facility History. The Village of Niantic has been identified as a target community for groundwater assessment through this project.

## Project Goal

To provide a resource tool of pertinent groundwater information to each target facility. This document describes a summary of historic information, current conditions and the potential for expansion of the water supply of Niantic.

## Niantic (Macon County)



The Village of Niantic (Facility Number 1150400) utilizes three active community water supply wells. Well Nos. 4 (Illinois EPA No. 47720), 5 (Illinois EPA No. 47721), and 6 (Illinois EPA No. 01150) distribute an average of 72,000 gallons per day to 273 service connections which serve an estimated population of 700. Well No.6 is the lead well with Wells 4 and 5 alternating as lag wells for the village.

Niantic was determined to be “Adequate” by the project criteria and this report serves as a summary of information should they need to increase their current supply. The shallow depth of Well No. 5 (47 feet) included this facility within the study; however, this well is only used as a “lag” well whereas, Well 6 produces the majority of the village’s water needs.

**Historic Information**

*Background Well Information*

Well No. 4

Constructed within sand and gravel in 1976 to a depth of 51 feet, the well is located in Section 2, T.16N., R.1W., Macon County. A drawdown of 17 feet was reported while pumping at a rate of 150 gpm for 4 hours. The nonpumping water level was 24 feet and the calculated specific capacity was 8.82 gpm/ft., upon completion.

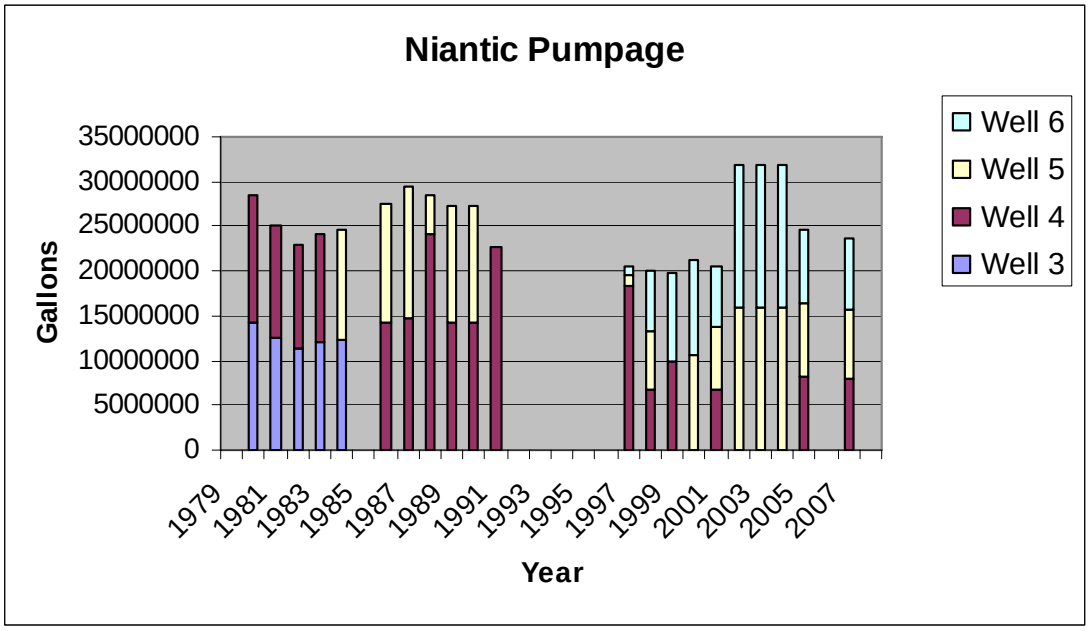
Well No. 5

Constructed within sand and gravel in 1984 to a depth of 47 feet, the well is located in Section 2, T.16N., R.1W., Macon County. A drawdown of 11.6 feet was reported while pumping at a rate of 150 gpm for 3 hours. The nonpumping water level was 17.7 feet and the calculated specific capacity was 12.93 gpm/ft., upon completion.

Well No. 6

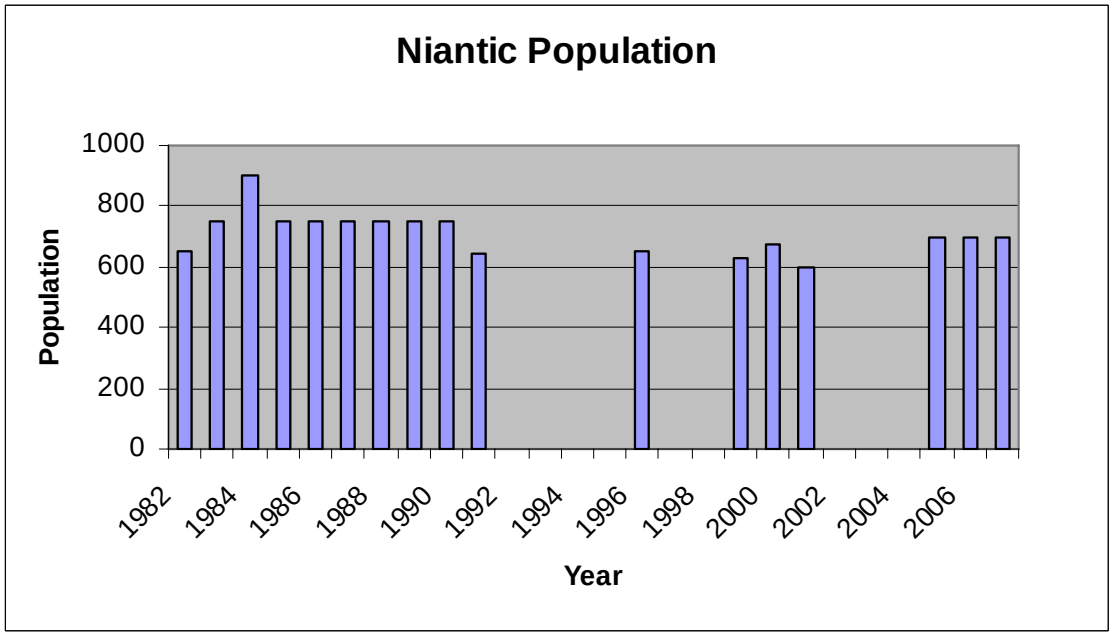
Constructed within sand and gravel in 1996 to a depth of 60 feet, the well is located in Section 2, T.16N., R.1W., Macon County. No additional information is available for this well other than a 2006 production rate of 200 gpm.

*Background Pumpage Information*




Source: ISWS Illinois Water Inventory Program

*Historic Population Information*




Source: ISWS Illinois Water Inventory Program

## Regional Information

Resources within the Niantic area

*Domestic Groundwater Supplies*
The available regional data indicate that groundwater for domestic and farm use in this part of Illinois is obtained from mainly small-diameter drilled wells finished in the shallow unconsolidated material above bedrock. These wells tap sand and gravel units that range in depth from about 40 to 60 feet in this area. The wells are reported as low-yielding but sufficient for domestic home supplies.

*Municipal Groundwater Supplies*
There is one town within the local area of Niantic that use groundwater as their source; the Village of Harristown, located to the east in Macon County.

The most recent information for the Village of Harristown indicates the town uses two wells for their supply, along with purchasing water from the City of Decatur on an as needed basis. Well No.1 is finished in sand and gravel deposits located in the Section 6, T.16N., R.1E., Macon County. The well was drilled to a depth of 31 feet in 1975 and has a production capacity of 100 gpm. Well No.2 is finished in sand and gravel deposits located in the Section 1, T.16N., R.1W., Macon County. The well was drilled to a depth of 33 feet in 1986 and has a production capacity of 120 gpm.

Figures 1 and 2 picture the ISWS Potential Yield maps for sand and gravel and bedrock aquifers in Illinois, respectively. The pertinent counties for Niantic are highlighted. Figure 1 indicates that sand and gravel deposits are limited within the local Niantic area. The bedrock map (Figure 2) indicates a poor potential for development from the bedrock throughout the area. Figures 3 and 4 present the probability of occurrence of the sand and gravel and the water-yielding character of the shallow bedrock for the Niantic area as depicted in the Illinois State Geologic Survey Circular 248, *Groundwater Geology in East-Central Illinois* (Selkregg, et al., 1958). Figure 3 indicates “Fair to Good,” possibilities for the occurrence of water-bearing sand and gravel deposits locally. Figure 4 indicates low-yielding shales and sandstone units directly beneath the drift and only small supplies are generally available from these shallow bedrock units. The domestic well construction records verify these map outlooks.

## Groundwater Availability Summary

The available information indicates that the sand and gravel units that Niantic currently uses are capable of providing their water needs now and into the future. Should Niantic need to expand and the town elects to drill another well, care should be taken in properly spacing any new well away from the current wells and also take into consideration the location of the Village of Harristown well field to ensure drawdown interference is minimal.

## References

Selkregg, L.F. and J.P. Kempton. 1958. Groundwater Geology in East-Central Illinois. A Preliminary Geologic Report. Illinois State Geological Survey Circular 248.

Estimated Potential Yields of Sand and Gravel Aquifers
in Niantic Area

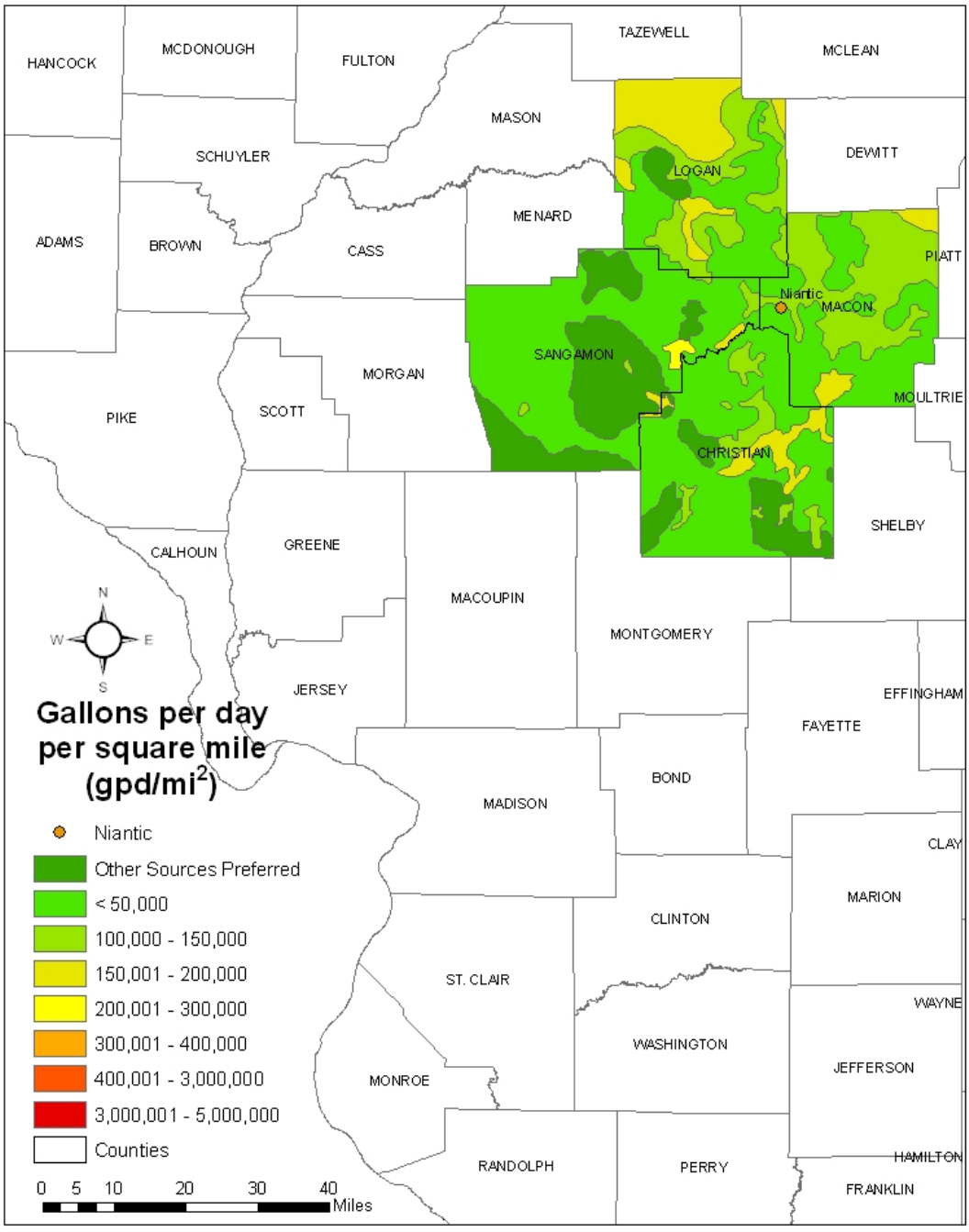



Figure 1.

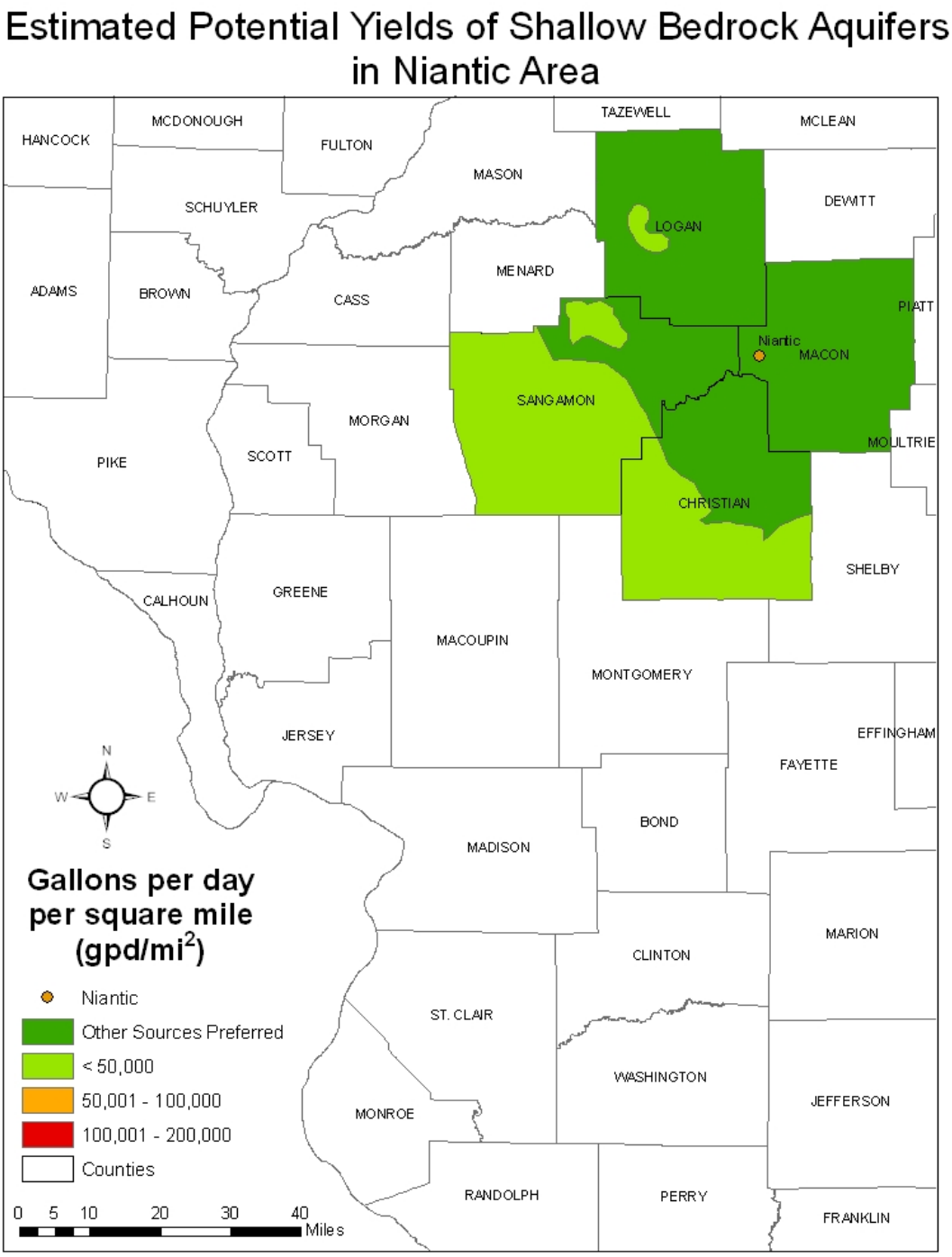

Estimated Potential Yields of Shallow Bedrock Aquifers in Niantic Area
HANCOCK
MCDONOUGH
FULTON
TAZEWELL
MCLEAN
MASON
DEWITT
SCHUYLER
LOGAN
ADAMS
BROWN
CASS
MENARD
PIATT
Niantic
MACON
SANGAMON
MORGAN
MOULTRIE
PIKE
SCOTT
CHRISTIAN
SHELBY
CALHOUN
GREENE
MACOUPIN
MONTGOMERY
JERSEY
EFFINGHAM
FAYETTE
BOND
MADISON
MARION
CLINTON
ST. CLAIR
WASHINGTON
JEFFERSON
MONROE
RANDOLPH
PERRY
FRANKLIN
N
W
E
S
Gallons per day per square mile (gpd/mi2)
Niantic
Other Sources Preferred
< 50,000
50,001 - 100,000
100,001 - 200,000
Counties
0 5 10 20 30 40
Miles

Figure 2.

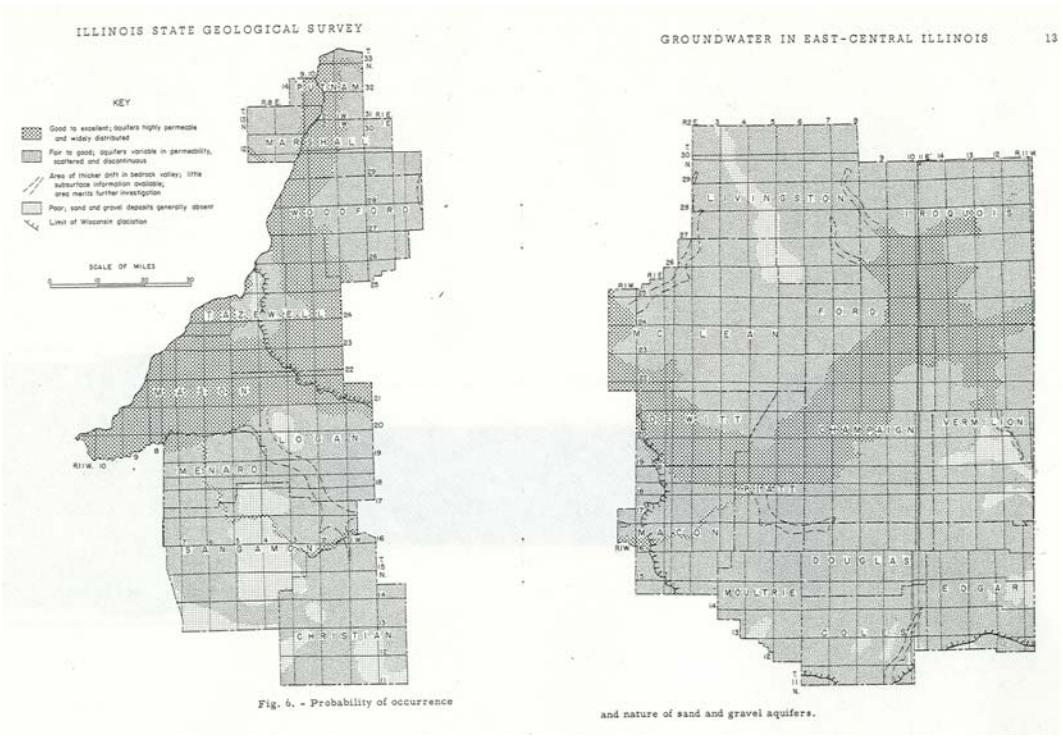



Fig. 6. - Probability of occurrence and nature of sand and gravel aquifers.

Figure 3.

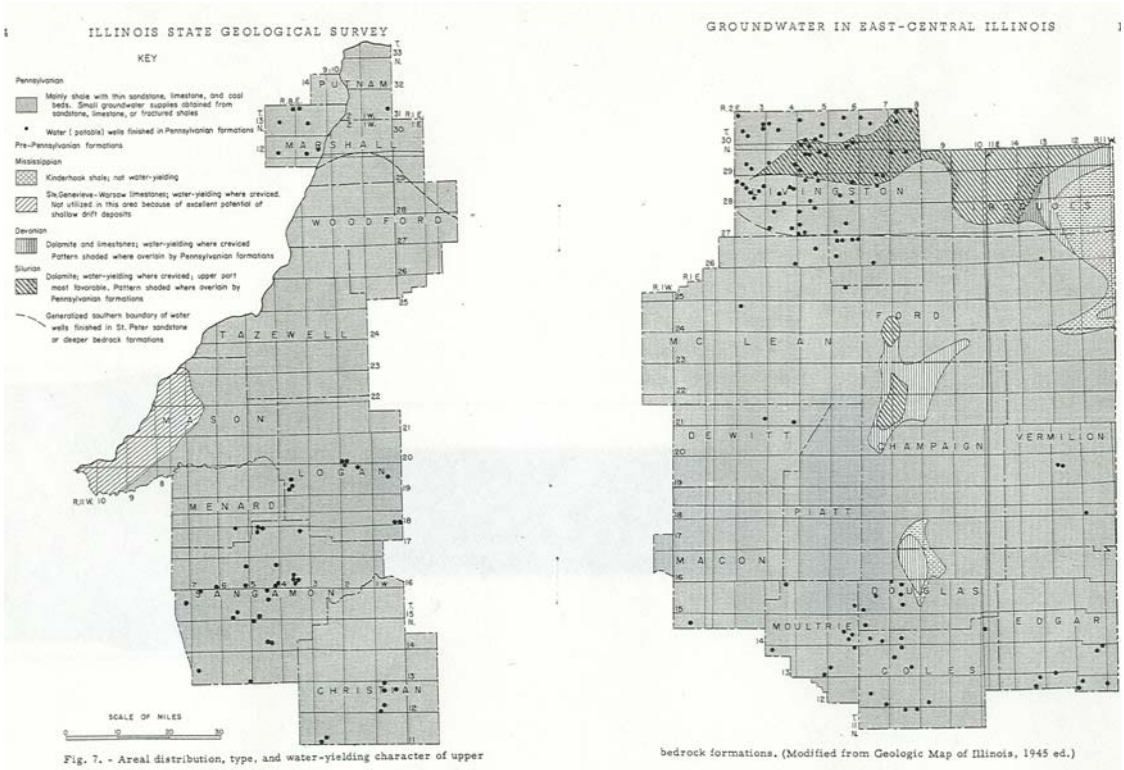



Fig. 7. - Areal distribution, type, and water-yielding character of upper bedrock formations. (Modified from Geologic Map of Illinois, 1945 ed.)

Figure 4.

## ISWS publications list for the Niantic and surrounding areas.

* = Publication is out of print.
$ = Payment required.

### CHRISTIAN

*1961 RI-41 Ground-water development in three areas of central Illinois. Walker-Walton. 43p.

*1961 RS-17 Evaluating wells and aquifers by analytical methods. Walton-Walker.

*1969 RI-62 Groundwater resources of the buried Mahomet Bedrock Valley. Visocky- Schicht. 52p.

*1978 CR-209 Assessment of public groundwater supplies in Illinois. Visocky-Wehrmann- Kim-Ringler. 193p.

1981 COOP-6 Assessment of a regional aquifer in central Illinois. Burris-Morse-Naymik. 77p.

*1981 COOP-7 Procedures for the collection of representative water quality data from monitoring wells. Gibb-Schuller-Griffin. 66p.

*1982 CR-299 A summary of information related to the comprehensive management of groundwater and surface water resources in the Sangamon River Basin, Illinois. O'Hearn-Williams. 145p.

### LOGAN

1965 COOP-3 Preliminary report on the ground-water resources of the Havana region in west-central Illinois. Walker-Bergstrom-Walton. 61p.

*1966 RI-55 Yields of wells in Pennsylvanian and Mississippian rocks in Illinois. Csallany. 42p.

*1969 RI-62 Groundwater resources of the buried Mahomet Bedrock Valley. Visocky-Schicht. 52p.

*1982 CR-299 A summary of information related to the comprehensive management of groundwater and surface water resources in the Sangamon River Basin, Illinois. O'Hearn- Williams. 145p.

1992 COOP-13 Regional groundwater resources in Western McLean and Eastern Tazewell Counties with emphasis on the Mahomet Bedrock Valley. Kempton-Visocky. 46p.

1994 COOP-16 The Sankoty-Mahomet aquifer in the confluence area of the Mackinaw and Mahomet bedrock valleys, central Illinois . Wilson-Kempton-Lott. 64p.

## MACON

*1969 RI-62 Groundwater resources of the buried Mahomet Bedrock Valley. Visocky-Schicht. 52p.

*1978 CR-209 Assessment of public groundwater supplies in Illinois. Visocky-Wehrmann-Kim- Ringler. 193p.

1981 COOP-6 Assessment of a regional aquifer in central Illinois. Burris-Morse-Naymik. 77p.

1982 COOP-8 Hydrogeologic evaluation of sand and gravel aquifers for municipal groundwater supplies in east-central Illinois. Kempton-Morse-Visocky. 59p.

*1982 CR-299 A summary of information related to the comprehensive management of groundwater and surface water resources in the Sangamon River Basin, Illinois O'Hearn-Williams. 145p.

1999 CR-642 Long-term ground-water level monitoring network and Aquifer Hydrologic Properties Database for DeWitt, Piatt, and Northern Macon Counties. Anliker. 24p.

## SANGAMON

*1969 RI-62 Groundwater resources of the buried Mahomet Bedrock Valley. Visocky-Schicht. 52p.

*1980 CR-237 Assessment of eighteen public groundwater supplies in Illinois. Wehrmann-Visocky-Burris-Ringler-Brower. 185p.

*1982 CR-299 A summary of information related to the comprehensive management of groundwater and surface water resources in the Sangamon River Basin, Illinois. O'Hearn-Williams. 145p.

1998 CR-627 Potential ground-water resources for Springfield, Illinois. Anliker-Woller. 197p.